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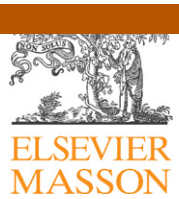

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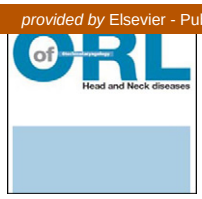

TECHNICAL NOTE

The scalp or how to reduce the scarring associated with the harvesting of a split-thickness skin graft in head and neck surgery

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Introduction

Skin grafts are commonly used in head and neck reconstruction surgery. Muscle flap coverage [1] or closure of a flap harvesting site [2] (e.g., antebrachial radial flap) may require split-thickness autograft. Harvesting, however, involves considerable postoperative pain, and healing is long, often leaving an unsightly or pathological scar outside of the head-and-neck region [3].

Reducing the scars left by reconstruction surgery should be a constant concern. It helps improve patients' quality of life. In this perspective, we here present a harvesting technique for split-thickness skin graft from the scalp in head and neck surgery.

The scalp is routinely used as a split-thickness skin graft donor region in burn surgery [4]. It avoids leaving an extra scar, which is completely hidden and invisible once the hair grows back.

Surgical technique

The harvesting site is shaved either the day or a few minutes before surgery. The area to be shaved depends on the size of the graft: for a small graft, just the occipital region is prepared; if the whole scalp or an area close to the glabrous skin is concerned, or in case of baldness, the hair-bearing area should be contoured with a marker pen so that harvesting does not cross the hairline.

The split-thickness skin graft is usually harvested under general anesthesia. If the area to be covered is small, however, local anesthesia allows an ambulatory procedure.

In cancer surgery with reconstruction, a single drape is positioned on the patient in dorsal decubitus, covering the occipital region, head and neck (Fig. 1A).

Under general anesthesia, the scalp is infiltrated with adrenalized serum (1 mg adrenaline per liter of 0.9% physiological saline) in the subgaleal space until the skin is well stretched. If adrenaline is contraindicated, infiltration may use physiological serum alone. Infiltration serves to expand the harvesting site and to limit bleeding. The harvesting site is then coated with liquid Vaseline to make the dermatome slide more easily (Fig. 1B).

To achieve regular and precise split-thickness skin harvesting, an electric or pneumatic dermatome is

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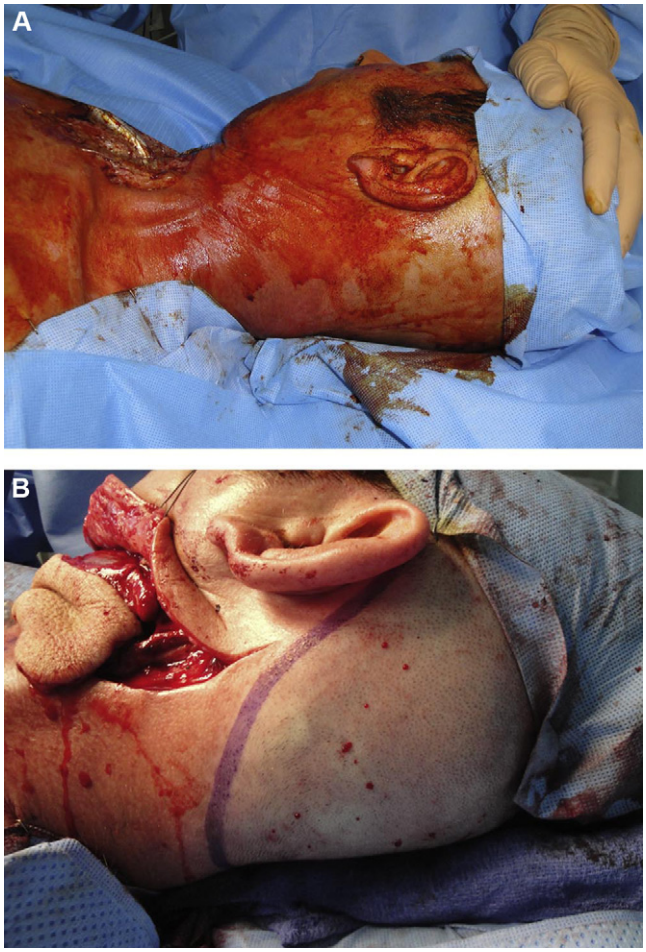

Figure 1 A. Positioning the scalp harvesting site and neck in the same surgical field. B. After identifying the hairline, the occipital region is infiltrated with adrenalized serum and coated with Vaseline.

recommended. Thickness should be set at 0.2 mm. The distance between the blade and the holder is checked using the tip of a lancet blade before beginning harvesting.

Harvesting is performed exerting a constant pressure (Fig. 2A). A 1 cm margin is left around the hairline. Scalp aspect is checked at the beginning of harvesting: hair bulbs are visible, with no fatty tissue (Fig. 2B).

Grafts are 2 to 3 tenths of a millimeter thick: the cut is made to the basement membrane of the epidermis, which is divided evenly between graft and donor site.

After harvesting, the graft is washed in physiological saline to remove residual hair. Hemostasis may use a compress soaked in adrenalized serum (1 mg adrenaline per litre of 0.9% physiological saline) or an alginate dressing placed directly on the harvesting site. The alginate is covered by a compressive dressing that will be removed after about 3 days, leaving it exposed to the air. When it spontaneously detaches, between D5 and D10, it is the sign that cicatrization has been achieved (Fig. 3). In partial scalp harvesting, the hair-bearing region may be shampooed, keeping the alginate dry, once the head dressing has been removed. If need be, a thick coat of Vaseline over the alginate and daily shampooing can encourage the alginate to detach after D10.

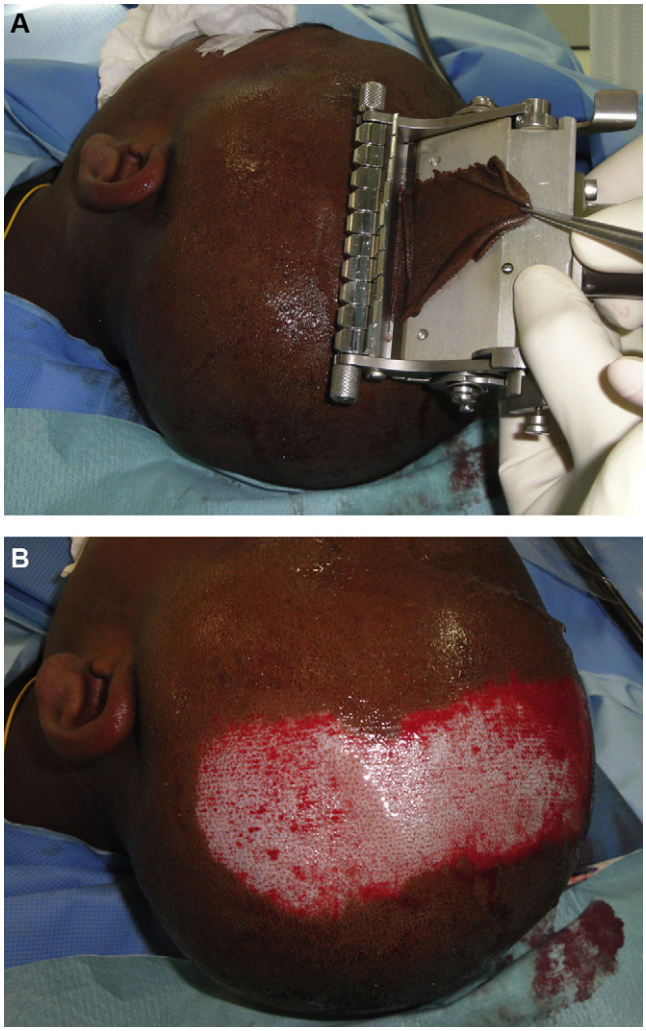

Figure 2 A. Harvesting a split-thickness skin graft from the scalp using an electric dermatome. B. Aspect of harvesting site: hair bulbs are clearly visible.

Discussion

Split-thickness skin graft from the scalp, respecting the hair bulbs, leaves a scar that is invisible once the hair grows back. The advantages of in head and neck surgery are many.

Unlike the thigh, the scalp can be included in the operative field, without repositioning the patient, which is especially advantageous in a long and complex reconstruction operation. The patient's head is mobilized sideways to expose the occipital region for harvesting. The head dressing near to the operative site can be checked without difficulty.

Moreover, the scalp is non-mobile, unlike the limbs, and the harvesting site is relatively pain-free compared to other donor regions [5]. As there is no scar outside of the head and neck region, early mobilization is possible, which is a great advantage in elderly patients and in cancer surgery with reconstruction.

Not changing harvesting site dressings is a bonus for patient comfort. The scalp is highly vascularized with many skin appendages, and thus heals quickly, within 6 days on average, compared to 2 weeks for other donor sites [5].

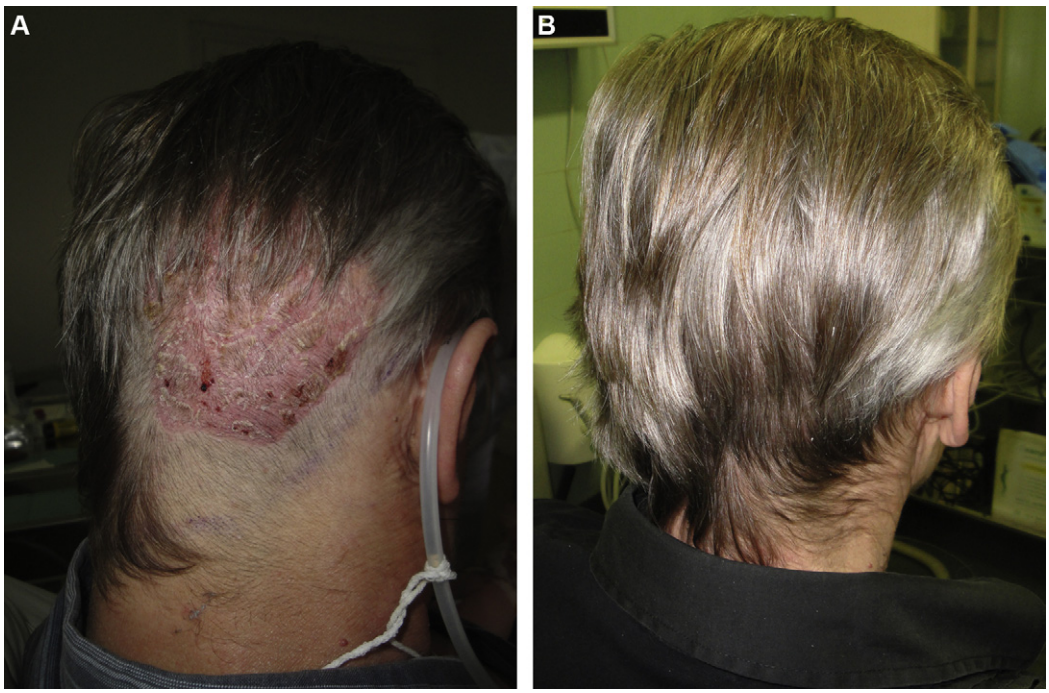

Figure 3 A. D5 postoperative aspect of the occipital region after detachment of the alginate dressing. B. Aspect of harvesting site 2 months postoperatively: hair regrowth hides the harvesting scar.

Scalp skin is especially suitable as head and neck cover material, being the body area closest in coloration [6]. Skin quality is comparable to that with a thigh graft [4].

The hair grows back quickly, soon hiding the postoperative donor site erythema. Hypertrophic or cheloid scarring has never been reported following split-thickness skin graft from the scalp, even in patients showing hypertrophic [5] or cheloid scars [3] at other donor sites.

Folliculitis and alopecia are the most frequently reported complications [7]. They are caused by excessively deep harvesting that is superinfected or includes hair bulbs. Areas of microalopecia (less than 1 cm^2) were reported in six out of 757 patients grafted from the scalp [5] and in 0.7% of Farina's series [3]. The risk of alopecia and hair bulb transfer is avoided if the dermatome is set at a thickness less than 0.25 mm [5]. Folliculitis was reported in 1.8% of a series of 295 burn patients, and only in case of iterative grafting [3]. These complications are limited, and treatment consists in ablating the affected area, primary wound closure and skin graft or tissue expansion [8].

The operation requires partial or total shaving of the scalp, which may be poorly accepted, especially by women. Rapid hair regrowth, the slightness of postoperative pain and avoidance of thigh scar, however, counterbalance this inconvenience.

Conclusion

Cicatrisation of the scalp as split-thickness skin graft donor site is quick and pain-free with an excellent esthetic result.

Harvesting split-thickness skin from the scalp is a simple and easy procedure that should be performed with rigor to avoid complications. It should become the reference technique for split-thickness skin grafting in head and neck repair surgery.

Disclosure of interest

The author declares that he has no conflicts of interest concerning this article.

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